

We claim:

- 1           1.     A system architecture for facilitating wireless communications between  
2 devices, comprising:  
3           A processor configured to implement interference avoidance processing and  
4 interference control processing for one or more groups of devices of a packet-  
5 communications system, the interference avoidance processing providing different  
6 addresses and a common clock for each of the groups of devices to minimize a  
7 frequency collision probability for the devices, the interference control processing  
8 detecting when a same frequency element is selected for more than one of the devices  
9 for a same time slot and implementing rescue processing to save data packets that are  
10 going to collide from being lost.
- 1           2.     The system architecture for facilitating wireless communications  
2 between devices of claim 1, wherein at least one of the groups of devices comprises a  
3 piconet.
- 1           3.     The system architecture for facilitating wireless communications  
2 between devices of claim 1, wherein the one or more of the groups of devices  
3 comprise(s) a plurality of piconets.
- 1           4.     The system architecture for facilitating wireless communications  
2 between devices of claim 1, wherein the interference avoidance processing includes  
3 choosing particular address bits to provide the different addresses.
- 1           5.     The system architecture for facilitating wireless communications  
2 between devices of claim 4, wherein the particular address bits comprise  $A_{1,3,5,7,9}$ .
- 1           6.     The system architecture for facilitating wireless communications  
2 between devices of claim 1, wherein the rescue processing is performed in consideration  
3 of a packet importance indicator.

1           7.     The system architecture for facilitating wireless communications  
2     between devices of claim 6, wherein the packet importance indicator relates to packet  
3     type.

1           8.     The system architecture for facilitating wireless communications  
2     between devices of claim 6, wherein the packet importance indicator relates to service  
3     type.

1           9.     The system architecture for facilitating wireless communications  
2     between devices of claim 6, wherein the packet importance indicator relates to a fairness  
3     criterion.

1           10.    The system architecture for facilitating wireless communications  
2     between devices of claim 9, wherein the fairness criterion comprises a history of prior  
3     connections made.

1           11.    The system architecture for facilitating wireless communications  
2     between devices of claim 1, wherein the packet-communication system is a spread-  
3     spectrum, frequency-hopping, short-range packet-communications system.

1           12.    The system architecture for facilitating wireless communications  
2     between devices of claim 1, wherein the packet-communication system is compatible  
3     with the Bluetooth standard.

1           13.    The system architecture for facilitating wireless communications  
2     between devices of claim 1, wherein the packet-communication system is capable of  
3     operating in the 2.4-Gbit industrial, scientific and medical (ISM) band.

1           14.    A method for facilitating wireless communications between devices,  
2     comprising the step of:  
3               controlling hopping frequency generators for a plurality of groups of  
4     communication devices within range of each other to generate hopping frequency

5 sequences for the groups of communications devices by providing the same clock values  
6 and different addresses to the hopping frequency generators.

1 15. The method for facilitating wireless communications between devices of  
2 claim 14, wherein only particular address bits are chosen to provide the different  
3 addresses.

1 16. The method for facilitating wireless communications between devices of  
2 claim 15, wherein the particular address bits comprise  $A_{1,3,5,7,9}$ .

1 17. A method for facilitating wireless communications between devices,  
2 comprising the steps of:  
3 determining when frequency collisions will occur for a plurality of groups of  
4 communication devices within range of each other; and  
5 inhibiting transmission of packets in all but one of the groups of communication  
6 devices during a collision time slot.

1 18. The method for facilitating wireless communications between devices of  
2 claim 17, wherein the step of inhibiting transmission of packets is performed in  
3 consideration of a packet importance indicator.

1 19. The method for facilitating wireless communications between devices of  
2 claim 18, wherein the packet importance indicator relates to packet type, service type  
3 and/or a fairness criterion.

1 20. The method for facilitating wireless communications between devices of  
2 claim 19, wherein the fairness criterion comprises a history of prior connections made.

1 21. The method for facilitating wireless communications between devices of  
2 claim 18, wherein the packet importance indicator is tuned.